On the ornithological collection of Friedrich Sellow in Brazil (1814–1831), with some considerations about the provenance of his specimens

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Abstract

The Prussian naturalist Friedrich Sellow (1789–1831) traveled through Brazil, Uruguay and Argentina between 1814 and 1831 gathering numerous zoological and botanical specimens. Despite the effort spent in those countries, the ornithological collection assembled by Sellow did not receive adequate care after it had been deposited in the Zoologische Museum in Berlin, thus compromising its integrity. In the present article we discuss the treatment given by Lichtenstein and by Sellow to this bird material, with special focus on some cases in which incorrect label information on Sellow’s specimens led to faulty conclusions on the zoogeography of South American birds.

Key words: M. H. K. Lichtenstein, Calyptura cristata, Pipra tyranulus, Picumnus exilis, Cercomacra brasiliana

Resumen

El naturalista prusiano Friedrich Sellow (1789–1831) viajó a través de Brasil, Uruguay y Argentina entre 1814 y 1831 colectando numerosos materiales zoológicos y botánicos. A pesar del largo esfuerzo de muestreo hecho por él en estos países, la colección ornitológica montada por Sellow no recibió el cuidado adecuado después de haber sido depositadas en el Zoologische Museum en Berlín, comprometiendo así su integridad. En el presente artículo discutimos el tratamiento dado por Lichtenstein y por Sellow a su material ornitológico, con especial atención en algunos casos en los cuales información equivocada en las etiquetas de sus especímenes lleva a conclusiones erradas sobre la zoogeografía de las aves Sudamericanas.

Palavras-clave: M. H. K. Lichtenstein, Calyptura cristata, Pipra tyranulus, Picumnus exilis, Cercomacra brasiliana

Introduction

Until the beginning of the nineteenth century, virtually all knowledge of Brazilian biodiversity was limited to the works of Piso and Marcgrave, published in the seventeenth century. This scenario changed slowly from 1808 onwards, when several traveling naturalists contributed in a more systematic and decisive way to the knowledge of Brazilian natural history (Pinto 1979). Remarkable among these naturalists was Friedrich Sellow (1789–1831), who undertook numerous expeditions to Brazil, Uruguay and Argentina between 1814 and 1831. He collected geological, botanical and zoological samples, and the largest amount of this material was deposited in the Zoologische Museum in Berlin (ZMB, today Museum für Naturkunde Berlin) (Papavero 1971; Pinto 1979).

Despite the importance of the specimens and the many years spent obtaining them, the ornithological collection assembled by Sellow did not receive adequate care after it was deposited in Berlin, due to heavy exchange activities and removal of the original specimen labels, which destroyed the data associated with many of the specimens (Stresemann 1948; Pacheco & Whitney 2001). This situation can lead today to faulty conclusions and significantly affect the apparent knowledge of biogeographic patterns and the history of the distribution of
South American birds. Therefore, the aim of this work is to present a critical evaluation of the avian material collected by Sellow mainly in Brazil.

In 1813, Friedrich Sellow, encouraged by Georg Heinrich v. Langsdorff (1774–1852), a Prussian working as a consul for Russia in Brazil, and financed by the Englishmen Sir Joseph Banks (1742–1820) and Dr. John Sims (1749–1831), traveled as a naturalist to South America and disembarked in Brazil in mid-1814 (Urban 1893; Hoehne et al. 1941; Stresemann 1948; Papavero 1971). Once in Brazil he settled in Rio de Janeiro, collecting for approximately one year along the outskirts of the city as well as in other localities of the same state. In this period Sellow met Georg Wilhelm Freyreiss (1789–1825), a German naturalist, and they began planning a trip to Bahia. Their journey started to materialize in July 1815 when the German Prince Maximilian zu Wied-Neuwied (1782–1867) arrived in the port of Rio de Janeiro and decided to travel with the two young naturalists (Stresemann 1948; Papavero 1971; Pinto 1979). Nevertheless, in November of the same year in the city of Vitória, Espírito Santo, Sellow left the Prince and Freyreiss to organize his collections and gather some specimens nearby. Wied and Freyreiss continued to travel until they reached Salvador, and in November 1816, on their way back, they re-encountered Sellow on the banks of the Mucuri River (Stresemann 1948; Wied-Neuwied 1889). From Vitória, Sellow slowly continued his journey, heading to Salvador and passing through the cities of Caravelas, Porto Seguro, Belmonte, Una and Olivença (Papavero 1971). He stayed in Bahia until 1818, and already in October 1817 he had sent lots of collected material from this province to the ZMB. M. H. K. Lichtenstein (1780–1857) received these specimens at the beginning of March 1818. In this same year, Sellow associated himself with this museum as collector-naturalist of Brazil. Alexander v. Humboldt and Lichtenstein greatly influenced his recruitment (Stresemann 1948).

In July 1818, Sellow returned to Rio de Janeiro to accompany Ignaz Franz Werner Maria von Olfers (1798–1872), then Secretary of the Prussian Legation in Rio de Janeiro, on a scientific excursion to the states of Minas Gerais and São Paulo, sponsored by the Prussian embassy in Brazil (Hoehne et al. 1941). On August 10\textsuperscript{th} 1818, the two naturalists left Rio de Janeiro, crossing the Serra dos Órgãos (known as the “Serra do Mar” in Hoehne et al. 1941). They arrived at the Minas Gerais border on September 3\textsuperscript{rd} and after about twenty days they reached Ouro Preto. For the following months they went on excursions to several Minas Gerais localities, arriving in São Paulo at the end of May 1819. In this state they visited Ipanema in June 1819, where they met Johann Natterer (1787–1843). At this point, Olfers decided to return to Rio de Janeiro for personal reasons and Sellow kept working in Ipanema and nearby localities until January 7\textsuperscript{th} 1820. He then departed for Santos and Rio de Janeiro, where he arrived in May of the same year (Urban 1893, 1906; Hoehne et al. 1941; Stresemann 1948; Papavero 1971). Throughout this trip, Sellow was in charge of collecting plants, birds and mammals, while Olfers collected other vertebrates, invertebrates and geological samples (Stresemann 1948; Papavero 1971). Figure 1 gives an approximate route of the expeditions undertaken by Sellow from 1818 to 1820.

Between 1821 and 1829, Sellow took several trips to southern Brazil and Uruguay, collecting around 2000 bird specimens and sending most of the material to the ZMB (Stresemann 1948). From April 1829 through mid-1830 he stayed in the city of São Paulo to rest and recover from health problems, which provided time for him to renew his plans and think about an old desire to travel to Amazonia. In May 1830, starting from Serra da Mantiqueira, he set off to São João del Rei, Minas Gerais. Later, in November of the same year, he continued to Ouro Preto, sending in February 18\textsuperscript{th} 1831 the last shipment of material to the ZMB. On March 29\textsuperscript{th} 1831 he wrote his last will and in October of the same year Sellow died, drowning in the waters of the Rio Doce (Urban 1893).

**Sellow’s collections**

According to Stresemann (1948), between 1817 and 1831 Sellow accumulated around 12,500 specimens of plants, more than 110,000 insects, 263 mammals, and 5457 birds, without counting nests and eggs, most of which were deposited in the ZMB (from larger series of single species only selected individuals were integrated into the collection; the remaining specimens were given away even before an acquisition record was made). The collection of such a significant amount of biological material certainly makes Sellow one of the most important naturalists who ever explored South America.

It would have been expected that those who received and prepared Sellow’s collections in the ZMB would have done so with the greatest possible care. However, Stresemann (1948) proposed that Lichtenstein, at that time
director of the institution, did not take enough care of this material, pointing out irresponsibility and gross neglect of the specimens. In Stresemann’s words (1948, p. 419): “Aber er war zum Mediziner ausgebildet worden, und seine Kenntnisse auf zoologischem Gebiet blieben zeitlebens recht oberflächlich. Sein Sinn stand vor allem danach, die Zahl der Tierarten und der Exemplare seines Museums rasch zu vergrößern, und um dieses Ziel ohne Anschaffungsetat zu erreichen, sah er keinen besseren Weg als den, der ihm vom Ministerium gewiesen worden war, nämlich einen Handel mit Doubletten zu treiben (schon von 1818 an), der dem Museum letzten Endes mehr geschadet als genützt hat. … Als Lichtenstein im Jahre 1854 die Vogelsammlung des Berliner Museums in systematischer Anordnung katalogisieren ließ, waren von 4931 Vögeln, die diese Anstalt von Sellow empfangen hatte, dort nur noch 1634 Stück (allesamt montiert und in der Schausammlung ausgestellt) verblieben, die übrigen aber, ohne vorher im Zusammenhang wissenschaftlich bearbeitet zu sein, als Doubletten verstreut worden [he [Lichtenstein] was trained as a physician, and his knowledge of zoology remained superficial during his entire life. Above all, he aimed to rapidly increase the number of species and samples in his museum, but to reach such aim without budget he saw no better way than trading duplicates (since 1818) as directed by the ministry. This procedure was more harmful than useful for the museum at the end. […] Only 1,634 of the 4,931 birds collected by Sellow (all mounted and displayed in the exhibition) remained in the museum when Lichtenstein initiated an inventory in 1854. The rest was spread as duplicates before being investigated in the context of the entire series.]” (see Lichtenstein 1823, 1854).

Besides exchanges, other factors contributed to the loss of relevant information regarding Sellow’s specimens. One of the most serious problems was a consequence of the field procedures adopted by the naturalist himself. Instead of attaching to each sample an individual tag with information about locality and date of collection, Sellow reported only collecting numbers on the labels and registered the collecting information as well as biological notes separately on loose sheets, making it necessary to analyze specimen by specimen to re-associate the information. These notes are partly preserved at the Museum für Naturkunde Berlin (Historische Bild- und Schriftgutsammlungen, Bestand: Zool. Mus., Signatur: ZMB, S I, Sellow, F., Nachlass, Verzeichnis in Brasilien gesammelter Vögel). This voluminous but difficult to read and unsorted material awaits a scientific evaluation.

Inquiries regarding single species (e.g., *Calyptura cristata*) were unsuccessful in producing the corresponding notes; success might be obtained only through a study of the complete material (Frahert et al., in prep.).

Another major problem was the removal of the collector’s tags from each specimen when they were passed from Lichtenstein to inspector August Rammelsberg, who prepared them for the exhibition. During this procedure, precise sites of collection were dispensed with and more general locations, such as “Brazil”, “Montevideo”, or “Bahia”, were substituted—and even those were sometimes interchanged (Stresemann 1948). This practice seriously affected the zoological value of Sellow’s specimens and has resulted in confusion regarding his localities (Stresemann 1948), as we discuss below.

*Picumnus exilis* (ZMB 10742, 10743): The distribution of this species is currently very well known; it is restricted to the littoral forests of Bahia and Sergipe states (Hellmayr 1929a, Pinto 1978, Winkler & Christie 2002, Rego et al. in prep). Nevertheless, on the tag of one of the syntypes (ZMB 10743) as well as in the description for this taxon (Lichtenstein 1823), the state of São Paulo is designated as the type locality, which is an obvious error. In the museum catalogue (Lichtenstein 1854), Brazil is reported as collecting locality for both the syntypes (ZMB 10742, which is missing, and ZMB 10743). According to the known distribution of this species and based on localities visited by Sellow, it can be assumed that both syntypes were collected when the naturalist was between the localities of Caravelas and Salvador, in Bahia, in 1817 or 1818, as Hellmayr (1929a) has pointed out.

*Iodopleura pipra* (ZMB 2300, 2301, 2302) and *Capornis cucullata* (ZMB 2080, 2081): *Iodopleura pipra* is typical of coastal ombrophilous forests, occurring principally in lowland areas. However, according to the catalog and the tags attached to the specimens, the three individuals of this species were collected by Sellow in São João Del Rey, Minas Gerais. This would imply a range extension of over 150 km into the interior of Brazil. The species’ presence in the interior of Minas Gerais, between 900 and 1,000 meters a.s.l., and in a different habitat (see Fig. 1), is highly improbable. The specimens of *Capornis cucullata*, which is endemic to the Brazilian Atlantic Forest, present a similar problem. The ZMB tags state that the two specimens of this species were collected in Montevideo, Uruguay, whereas the catalogue reports Montevideo for ZMB 2080 and Brazil for ZMB 2081. It is worth noting that Sellow passed through areas where both species are known to occur, making even more improbable that the material was collected in the localities reported on the tags.

*Cercomacra brasiliana* (ZMB 3059, ZMB 3060): Willis & Oniki (2003) reported a skin of this species
collected by Sellow in the state of São Paulo, and the two specimens in the ZMB are alleged to have been collected by Sellow and von Olfers in this state. Aside from Sellow’s specimens, there is only one published record of *C. brasiliiana* in the state of São Paulo (Pacheco and Fonseca 1992). However, although Pacheco and Fonseca reported this species from the Paraíba do Sul River Valley, northeastern São Paulo, this record is erroneous and should be disregarded (P. S. Fonseca and J. F. Pacheco, *in litt.*). Therefore, the only records for the state would be Sellow’s specimens, suggested by Willis & Oniki (2003) to be “maybe from Guaratinguetá”. Alternatively, considering the known distribution of *C. brasiliiana* and the localities visited by Sellow, the true provenance of this specimen could be the Paraíba do Sul River Valley in Rio de Janeiro state, through which Sellow passed on several occasions and where the species was (and still is) common. Based on the lack of independent records of this species in São Paulo, it would be best excluded from the state list (Silveira & Uezu 2011).

*Calyptura cristata* (ZMB 2306): About 50 specimens of this bird, all collected in the nineteenth century, are currently housed in museums in Europe, the United States, and Brazil (Snow 2004). There were no additional records of this species for more than 100 years, until 1996, when a group of ornithologists observed an individual for three consecutive days in the locality of Garrafão, municipality of Teresópolis, Rio de Janeiro state (Pacheco & Fonseca 2001; Lambert & Kirwan 2010). Given its apparently restricted distribution and the scarcity of recent records, the species is currently considered one of the rarest in the world and is listed as critically threatened (Silveira 2008; IUCN 2010).

All information regarding *Calyptura cristata*, except for that in Pacheco & Fonseca (2001), consists of a brief commentary on its habits and vocalization (Descourtiz 1856; Krabbe 2007) and the skins housed in museums. Unfortunately, a large portion of these skins is tagged with generalized information about collection localities (*e.g.*, “Rio de Janeiro”, “Brazil”, “southeast of Brazil”). The few specimens with more precise collection localities refer to Nova Friburgo and Cantagalo (Hellmayr 1929b; Sick 1997; Krabbe 2007; Lambert & Kirwan 2010), localities ca. 100 and 130 km northeast of the city of Rio de Janeiro, respectively.

Although many sources (*e.g.*, Snow 2004; Birdlife 2011) consider *Calyptura cristata* to be restricted to the state of Rio de Janeiro, the species was recently reported in the municipality of Ubatuba, on the northern coast of São Paulo (Lambert & Kirwan 2010). Nevertheless, problems associated with records of *Calyptura cristata* out of Rio de Janeiro state (such as a lack of more than one independent observer, lack of detail in the descriptions, and lack of documentation) demand that these reports should be treated very cautiously (Lambert & Kirwan 2010).

Stopiglia *et al.* (2009) recently reported the rediscovery of a specimen of *Calyptura cristata* (ZMB 2306) collected by Sellow and von Olfers, supposedly in the state of São Paulo. According to these authors, this specimen was used to describe *Pipra tyrannulus* (sic) Wagler, 1830, indicating that this name should be treated as a junior synonym of *Calyptura cristata* (Vieillot, 1818). Stopiglia *et al.* (2009) also pointed out that this specimen “confirms that this enigmatic species does (or did) occur in São Paulo”. As in the examples discussed above, the reliability of São Paulo as the true collection locality of *Calyptura cristata* is questionable, especially considering that Sellow and von Olfers passed through Serra dos Órgãos and the middle valley of Rio Paraíba do Sul (Hoehne *et al.* 1941; Papavero 1971 – Fig. 1), regions where the recent and better documented historical records of *Calyptura cristata* were made (Lambert & Kirwan 2010; BirdLife International 2011).

The material accumulated during the trip from Rio de Janeiro through Minas Gerais to São Paulo (from 1818 to 1820), was sent in four shipments (Stresemann 1948) dispatched from Rio de Janeiro between September 1820 and mid-1821, after Sellow and von Olfers had completed their expedition. According to Stresemann (1948), the date for the *Calyptura* specimen in the catalogue of the ZMB was based on the collecting period at the site “San Paulo” (compare Stopiglia *et al.* 2009). Therefore, it cannot be used as independent evidence that the specimens were collected in São Paulo, *contra* Stopiglia *et al.* (2009). Finally, it is worth noting that other skilled naturalists, including Natterer, Lund and Spix, traveled to the same localities in São Paulo at the same time as Sellow and did not collect or report any individuals of *Calyptura cristata* in the region, even after having spent months and years in this region (Pelzeln 1871; Paynter & Traylor 1991; Vanzolini 1993; Krabbe 2007).

As stated above, an initial search for detailed information about this specimen in the original documents of Sellow (in the Museum für Naturkunde Berlin) failed. Admitting the high probability of error in the information present on the tags and in the catalogues, it is plausible that the specimen in question was collected by Sellow and von Olfers from the area between Serra dos Órgãos and the frontier with Minas Gerais in August 1818, or that Sellow collected it when he was alone in Serra dos Órgãos in 1820. Therefore, we suggest that in the absence of unambiguous information it is best to omit *Calyptura cristata* from the São Paulo state bird list.
FIGURE 1. Approximate route of the travels of Friedrich Sellow between 1818 and 1820. Green represents original Atlantic rainforest coverage, and yellow the Cerrado biome. Greyish areas show elevations higher than 1,000 meters a.s.l.

Conclusions

The data for specimens collected by Sellow and housed at the ZMB, as presented in the examples above, seem to be erroneous and are not consistent between label and catalogue for selected cases, a fact previously reported in the literature (e.g. Stresemann 1948). Reasons for these inconsistencies are problems with data transfer from the collectors’ documentations to the label as well as from the label to the catalogue. The loss of connection between the numerous specimens and the original collector’s documentation during the first labelling in the museum results in a high probability that for most specimens the real localities could never be recovered again, although, recovering this information has high priority in the reconstruction of the historical distribution of species as well as in taxonomy. The only way to try to solve these problems is re-establishing the connection between the specimens and the historical documents of Sellow, which are still available in the archive of the ZMB. As long as these documents are not fully analysed, we suggest that Sellow’s localities should be considered hypothetical and not be used as evidence of the historical distributions of species.

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